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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,058	10/02/2000	Steve W.L. Yeung	25821.P028	4464

7590 02/21/2003

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EXAMINER

NGUYEN, JIMMY H

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 02/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/678,058

Applicant(s)

YEUNG, STEVE W.L.

Examiner

Jimmy H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.

- (e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
 - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

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- (f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet (37 CFR 1.52(b)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

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- (k) Sequence Listing, See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

1. In the instant case, (1) there are no sections of Brief Summary of the Invention, Brief Description of the Several Views of the Drawing(s) and Detailed Description of the Invention, (2) each section should include a section heading (see 37 CFR 1.77(b)), (3) the specification is not a good copy, it is therefore difficult to be read, e.g., see page 8, and (4) the specification contains many lines overlapped each other, e.g., see pages 9 and 11.

Claim Objections

2. Claim 4 is objected to because of the following informalities: it does not indicate the claim which depends on. Appropriate correction is required.

Drawings

3. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81. No new matter may be introduced in the required drawing.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features, “a row driving (common) driving matrix consisting of orthogonal block-circulant matrices” as recited in claim 1, “a row driving (common) driving matrix is a block diagonal matrix” and “the building blocks”, as recited in claim 4, “a row and column interchanged version of the row (common) driving matrix” as recited in claim 5, “row driving (common) driving matrix comprises orthogonal block-circulant building blocks” as recited in claims 6 and 8, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claims above, the disclosure in the instant application does not contain such description and details how a protocol drives a liquid crystal display (i.e., the disclosure does not describe expressly the role or function of the claimed protocol and a liquid crystal display device), and the row (common) driving matrix and the corresponding orthogonal block-circulant matrices (i.e., what matrices disclosed in the application corresponds to the claimed row (common) driving matrix and the corresponding orthogonal block-circulant matrices), as recited in independent claim 1, so as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. See MPEP 608.01(p).

Additionally to claims 2 and 5, the disclosure in the instant application does not contain such description and details how the row and column of the row (common) driving matrix are interchanged, and why the row (common) driving matrix is a row and column interchanged

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version of the row (common) driving matrix. Furthermore, what matrices disclosed in the application correspond to the claimed row (common) driving matrix and the claimed row and column interchanged version of the row (common) driving matrix.

Additionally to claims 6 and 8, the disclosure in the instant application does not contain such description and details what matrices disclosed in the application, corresponding to the claimed row (common) driving matrix and the corresponding orthogonal block-circulant building blocks. Further, the independent claim 1 recites the row (common) driving matrix consisting of orthogonal block-circulant matrices, i.e., the row (common) driving matrix does not comprising any other elements except the orthogonal block-circulant matrices. However, the dependent claims 6 and 8 recites the row (common) driving matrix further comprising orthogonal block-circulant building blocks, so as to make these claims not consistent with the independent claim 1.

Additionally to claim 9, the disclosure in the instant application does not contain such description and details what matrices disclosed in the application, corresponding to the claimed row (common) driving matrix and the corresponding order-4 orthogonal block-circulant building blocks.

Additionally to claim 10, the disclosure in the instant application does not contain such description and details what matrices disclosed in the application, corresponding to the claimed row (common) driving matrix and the corresponding order-8 orthogonal block-circulant building blocks.

Additionally to claim 11, the disclosure in the instant application does not contain such description and details “(5) all alternatives ... (i)-(iii)”, see last 8 lines, e.g., what “E”, “ER_{4,2}” and all alternatives of (1)-(4) look like and are disclosed in the application.

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Additionally to claim 12, the disclosure in the instant application does not contain such description and details “(28) all alternatives ... (i)-(iii)”, see last 8 lines , e.g., what “E”, “ER_{8,2i}” and all alternatives of (1)-(4) look like and are disclosed in the application.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim above, when this claim is read together with independent claim, it is not clear what the applicants mean “said row (common) driving matrix consisting of orthogonal block-circulant matrices” (see claim 1) and “said row (common) driving matrix is an orthogonal block-circulant matrix” (see claim 3), i.e, the row (common) driving matrix consisting of a single orthogonal block-circulant matrix or a plurality of orthogonal block-circulant matrices.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an

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international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

10. Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Otani et al. (USPN: 6,054,972), hereinafter Otani.

As per claim 1, the claimed invention reads on Otani as follows: Otani discloses a protocol for driving a liquid crystal display (LCD), comprising a row driving matrix (a matrix of scan data 10, see fig. 3, specifically at col. 16, line 7) consisting of orthogonal block-circulant matrices (the normal form Hadamad matrices T in eight-order, see col. 5, line 40 through col. 6, line 10, specifically at col. 16, lines 7-13). The elements in the claim are read in the reference.

Regarding to claim 3, Otani further teaches the row driving matrix (i.e., a matrix of scan data 10) being an orthogonal block-circulant matrix (see fig. 3, col. 8, lines 26-31).

Regarding to claim 4, Otani further teaches the row driving matrix (i.e., a matrix of scan data 10) being a block diagonal matrix and the building blocks (matrices T, see Formula 8, at col. 5) are orthogonal block-circulant, further see fig. 3, col. 16, lines 7-13.

Regarding to claim 6, Otani further teaches the orthogonal block-circulant building blocks (i.e., matrices T) generated by using a paraunitary matrix (a sub matrix S, see Formula 10, at col. 6, further see col. 16, lines 7-13).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani in view of Applicant's Admitted Prior Art (page 1, last paragraph), hereinafter AAPA.

As per claims above, Otani further discloses row interchange of the driving matrix in order to obtain higher contrast (col. 5, lines 32-60). Accordingly, the difference between the invention defined in claim 8 and the Otani reference is the addition of the column interchange of the driving matrix.

However, AAPA teaches that the column interchange of the driving matrix is suggested to prevent the problem of loss contrast due to frame response, the crosstalk problem due to the difference in frequencies in the rows of the driving matrix and the problem of high computation and memory burden (see page 1, last paragraph, lines 1-16).

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to include AAPA's teaching, i.e., the column interchange of the driving matrix, in the protocol of Otani because this would improve the quality of the LCD device by preventing the problem of loss contrast due to frame response, the crosstalk problem due to the difference in frequencies in the rows of the driving matrix and the problem of high computation and memory burden, as taught by AAPA (see page 1, last paragraph, lines 1-16).

13. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani in view of Sekihara et al. (USPN: 4,993,075), hereinafter Sekihara.

As per claim 8, Otani further discloses the row driving matrix is based on orthogonal block-circulant building blocks (matrices T, see Formula 8, at col. 5, and col. 16, lines 7-13), but does not disclose expressly the orthogonal block-circulant building blocks generated by

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nonlinear programming. Accordingly, the difference between the invention defined in claim 8 and the Otani reference is the orthogonal block-circulant building blocks generated by nonlinear programming.

However, Sekihara teaches that the generation of orthogonal matrix by nonlinear programming is well-known to one skilled in the art at the time of the invention was made, to easily increase the speed of processing (col. 7, lines 8-9, col. 8, lines 1-53 and col. 2, lines 10-11). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to utilize Sekihara's teaching, i.e., the orthogonal block-circulant building blocks generated by nonlinear programming, in the protocol of Otani because this would easily increase the speed of processing, as taught by Sekihara (col. 2, lines 10-11).

Regarding to claims 9-10, Otani further teaches that the orthogonal block-circulant building blocks (i.e., matrices T) are in eight-order (see Formula 8 at col. 5, and col. 16, lines 7-13) or any order (col. 15, lines 24-29). Therefore, these claims are rejected for the reason as set forth above.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fukui et al (USPN: 5,657,043, see cols. 2-3), Hirai et al (USPN: 5,734,364, see figs. 5-10, table at col. 9), Yamamoto et al. (USPN: 5,805,130, see figs. 1, 5, 13, 29a and 31a) and Furukawa et al. (USPN: 5,929,832, see fig. 2), all disclose related row (common) driving matrix.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is (703) 306-5422.

The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231


or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

JHN
February 12, 2003


Amare Mengistu
Primary Examiner